ACTION MEMORANDUM

SDMS # 88046200

Request for Removal Action for Kenwood Storm Water Drainage Pathway

Montrose Chemical Superfund Site (CAD008242711)
Los Angeles County, California

FROM: **Jeff Dhont, Remedial Project Manager**
EPA Region IX

TO: **Keith Takata, Director, Superfund Division**
EPA Region IX

June 8, 2001

I. Purpose

The purpose of this Action Memorandum is to request and document approval of the proposed removal action described herein. This Action Memorandum does not address all response actions necessary for the Montrose Chemical Superfund Site (see next section for context of this action).

Under the removal action requested by this Action Memorandum, EPA will remove soils from residential yards that are contaminated with the pesticide DDT. These soils were affected by historical storm water drainage from the former Montrose Chemical DDT manufacturing plant. The removal action requested by this Action Memorandum includes provision for temporary relocation of residents where requested, demolition of yard structures as needed, excavation of contaminated soil, backfill and compaction of clean soil, restoration of yards, appropriate disposal of contaminated soil, and several types of sampling activities. This removal action will remove unacceptable long-term health risks to residents and will attain the Applicable or Relevant and Appropriate Requirements (ARARs) identified herein for this action.

II. Site Conditions, Background, and Context of this Action

Site Status:	NPL
CERCLIS ID:	0926
Site Name:	Montrose Chemical Superfund Site
Site ID:	CAD008242711
Category of Removal:	Time Critical

A. KEY DOCUMENTS

The documents considered by EPA in selecting the action requested by this Action Memorandum reside in the administrative record for this removal action, to be made available within 60 days of the signing of this Action Memorandum as provided at 40 C.F.R. §300.820(b)(1). However, the following key documents provide a primary foundation for the nature of the site, the extent of contamination, and the estimated potential health risks.

1. *Remedial Investigation Report Addendum, Residential Soils and Produce Investigation, Montrose Chemical Superfund Site, Los Angeles County, California*, April 2001. This document includes EPA's human health risk assessment for residential areas near the former Montrose Chemical plant, as Appendix K.

2. *Final Remedial Investigation Report for the Montrose Superfund Site, Los Angeles, California*, May 18, 1998. This document is amended by the document listed as (1) above and contains extensive discussions of Montrose operations and of the history of the storm water drainage pathway.

3. *Completion Report, Neighborhood Sampling Program, Montrose Chemical Corporation Superfund Site, Los Angeles, California*; November 1999.

The Remedial Investigation Report listed as (2) above covered contamination at and near the former Montrose plant property, groundwater contamination, and sewer contamination. A small number of early studies in neighborhood areas were also included. The Remedial Investigation Report Addendum listed as (1) above provides the majority of information about EPA's latest and most extensive investigations of soil and homegrown produce in residential areas for the Montrose Chemical Superfund Site.

B. BACKGROUND

The Montrose Chemical Corporation of California (Montrose) manufactured the insecticide diclorodiphenlytrichloroethane (DDT) at a chemical manufacturing plant located at 20201 South Normandie Avenue in Los Angeles County, California, from 1947 to 1982. Montrose produced DDT at the former plant twenty four hours per day, seven days a week for approximately thirty-five years. During that time, Montrose manufactured more than 1.6 billion pounds of DDT at the Normandie Avenue plant property. Montrose also ground DDT into wetable powders at this location. Stauffer Chemical Company, one of Montrose's parent corporations, also operated, until 1963, a small plant at the Montrose plant property for manufacturing benzene hexachloride (BHC), another pesticide. Stauffer Chemical also conducted some experiments on the alpha and beta isomers of BHC at the Montrose plant property. The Montrose plant was dismantled and levelled in 1984 and the Montrose plant property is currently fenced and covered with asphalt.

Significant quantities of DDT and other hazardous substances were released as a result of Montrose's operations. See US EPA, Final Remedial Investigation Report for the Montrose Chemical Superfund Site, Section 1.3 (Site and Operational History) (May 1998). Today, the Montrose plant property remains significantly contaminated with DDT and other hazardous substances. Additionally, the portion of the storm water pathway adjacent to the Montrose plant property (e.g. the Jones Ditch and Normandie Avenue Ditch) remain contaminated with DDT and other hazardous substances. Since the late 1980's, these areas have been covered by asphalt to prevent the release of DDT into the current storm water pathway.

DDT and monochlorobenzene, one of the raw materials for making DDT, as well as other hazardous substances, entered the environment from the former Montrose plant operation by a variety of ways and with a variety of ultimate contaminant fates. EPA has been investigating, evaluating, and, where necessary, taking response actions for the following types of hazardous substance contamination which came to exist as a result of the operations of the former Montrose plant:

1. DDT, BHC and other contamination in soils at the former plant property and surrounding industrial properties;

2. Dense non-aqueous phase liquid (DDT dissolved in monochlorobenzene) in soils under the former plant property and extending down below the water table under the former plant property;

3. Dissolved groundwater contamination which extends through as many as six hydrostratigraphic units and to a distance of up to 1.3 miles from the former Montrose plant property;

4. Waste materials in the sanitary sewer as a result of discharges to the sewer system during Montrose's operations;

5. DDT and BHC in residential soils as a result of aerial dispersion of dust from the former Montrose plant property;

6. DDT and BHC in historical storm water drainage pathways, some of which lie in residential yards near the former Montrose plant property;

7. DDT and BHC in fill materials which were deposited in what came to be residential areas;

8. DDT in the *existing* storm water drainage pathway, including the Kenwood Drain, the Torrance Lateral, the Dominguez Channel, and the Consolidated Slip and Los Angeles Harbor;

9. DDT on the ocean floor off the coast of Palos Verdes ("the Palos Verdes Shelf") which arrived there as a result of discharge from the sanitary sewer outfall.

Montrose's operations at 20201 Normandie resulted in releases of DDT in surface water runoff to the natural drainage pathway. From 1947 until the mid-1960's, the storm water pathway that began at the Montrose plant property included an unimproved ditch on the west side of Kenwood Avenue (which was known as Maple Street for part of this period) from 204th Street to Torrance Boulevard[1] ("The Kenwood Ditch"). (See Figure 1a). Figure 1b depicts this ditch as a light dashed line. Up to at least 1953, acidic process wastewater contaminated with DDT and other hazardous substances, such as chlorobenzene, from Montrose's DDT manufacturing operations was occasionally released into this storm water pathway as the result of blockages in the sewer lines at the Montrose plant property. Correspondence and inspection reports from this time period indicate that Montrose acidic wastes were entering the Kenwood Ditch and ponding of these wastes was documented at the corner of Florence and Maple Streets, today the corner of 204th Street and Kenwood Avenue. See Figure 1a for some of the ponded areas; see also RI Addendum Plate 3 for a more complete depiction of such areas. During this time, Montrose was discharging approximately 156,000 to 233,000 gallons of wastewater per day into the sewer. As a result, the quantity of DDT contaminated waste water that may have been released to the storm water pathway during any of the blockages of Montrose's sewer connection would have been substantial.

[1]The existence and location of this storm water pathway has been determined based on EPA review of historical aerial photographs and other historical documents. In addition to documents submitted to EPA, several consultants retained by Montrose Chemical Company have verified that the storm water path from the Montrose plant property included the Kenwood Ditch during this time period.

DDT and other hazardous substances such as BHC were also released from the Montrose plant property during the 1947-1982 period in storm water.[2] DDT in storm water leaving the Montrose plant property originated from a number of sources including DDT grinding operations, DDT formulation operations, and DDT transport and storage activities. During heavy rains, over 200,000 gallons of storm water would be generated at the Montrose plant property. Storm water leaving the Montrose plant property originated solely from that property as there was no "upstream source."

Kenwood Avenue historically was and remains the lowest natural point in the local terrain. During the 1940s, 1950s and 1960s, historical photographs indicate areas of ponding along this street during heavy rains. Long-standing residents (living in the area for 20-40 years) have provided anecdotes to EPA from memory of times that Kenwood Avenue became a "river" and many yards along the street flooded. The east end of the yards on the west side of Kenwood Avenue had a natural depression known later as the "Kenwood Ditch," which ran north-south along the west side of Kenwood Avenue. The Los Angeles County Flood Control District maintained this ditch and held an easement for this purpose (See Figure 1b); driveways of residents typically had a culvert under them to allow water through. In the late 1960s and early 1970s, the Los Angeles County replaced the Kenwood Ditch with a buried concrete structure known as the "Kenwood Drain," four feet high and buried to depths up to twelve feet below ground surface. This drain is depicted on Figure 1b as a dark line. In the process of building the Kenwood Drain, a large amount of soil was moved around, out of, and back into residential yards. The Kenwood Drain excavation dwarfed the size of the original Kenwood Ditch. In some locations, the Kenwood Ditch may have simply been filled in; in others, it may have been excavated during the Kenwood Drain construction. This activity, and subsequent activity by some owners over the ensuing decades to bring soil in or move soil on their property, has resulted in a high degree of variability in where DDT-contaminated soil has come to be located along the west side of Kenwood Avenue.

Sampling results from EPA's recent (1999-2000) investigation along the west side of Kenwood Avenue and related properties provide further evidence that DDT and other hazardous substances originated at the Montrose plant property. Peak concentrations of DDT in the soil at these properties are as high as 6,700 parts per million (ppm) and are far above background concentrations (see subsequent discussions in this Action Memorandum). In addition, other

[2] Evidence of hazardous substances being released from the Montrose plant property in storm water can be found in Montrose Chemical and Stauffer Chemical Company records. In addition, EPA and State of California investigations in the early 1980s documented the release of significant concentrations of DDT from the Montrose plant property in storm water.

hazardous substances unique to operations at the Montrose plant property were detected in soil at these residential properties along Kenwood Avenue.[3]

C. CONTEXT OF THIS REMOVAL ACTION AND THE KENWOOD STORM WATER DRAINAGE PATHWAY

The removal action requested by this Action Memorandum addresses Montrose-related contaminants in soils due to the historical presence of the storm water drainage pathway known as the Kenwood Ditch. The location of this former ditch (and residual soils containing DDT from the former ditch) lies in residential front yards on the *west* side of Kenwood Avenue in the unincorporated Harbor Gateway Area of Los Angeles (near Torrance). One property on Torrance Boulevard and four properties on West 204th Street are also included in this drainage pathway, which extends from the Del Amo Alley on the north to Torrance Boulevard on the South.

In this Action Memorandum, the area formerly occupied by the Kenwood Ditch and also the area within present-day residential yards where soils are still influenced by the presence of the former Kenwood Ditch (i.e. have elevated levels of total DDT) is referred to as the ***Kenwood storm water drainage pathway.*** The vicinity of this pathway is shown on Figure 2. The properties that are traversed by this pathway, and therefore involved in this removal action, are shown in Figure 3. It should be noted that only part of the area of each involved property (generally within the front yards of properties on Kenwood Avenue) is subject to removal activity. The physical area encompassed by the Kenwood storm water drainage pathway within these properties, and therefore the area subject to the removal action, is defined by sampling and the location of the former Kenwood Ditch. The actual extent of this area will be defined in EPA's work plan for this removal action.

This removal action does **not** address:

- Montrose-related contamination in residential areas which may reside outside of the Kenwood storm water drainage pathway as discussed above;
- groundwater contamination;
- soil contamination;
- contamination of non-aqueous phase liquids at or near the former Montrose plant property;

[3]Specifically, chlorobenzene, which was used as a feedstock in the production of DDT was detected at two locations along the historic storm water pathway. Also, alpha and beta BHC were detected at certain locations along the historic storm water pathway on the west side of Kenwood Avenue (See US EPA, Remedial Investigation Report Addendum, April 2001).

- contamination in non-residential areas; or
- contamination in the sanitary sewer system.

Cleanup actions for these other areas, where appropriate, have been or will be selected by EPA in separate response action decision documents and addressed by other response actions.

D. SITE DESCRIPTION

1. Removal Site Evaluation

A brief summary of facts establishing that Montrose is the source of contamination in the Kenwood storm water drainage pathway was discussed in the previous section. There is more detail on these facts in the Remedial Investigation Report Addendum ("RI Addendum") and Final Remedial Investigation Report ("RI Report"), as fully cited above in Section II(A)(1) and (2) of this Action Memorandum. Additional source documents, including Montrose Chemical records, can be found in the administrative record for this removal action. An extensive history of the operations of the former Montrose Chemical plant is given in the RI Report, in Section 1.3 of that document. Only those investigation elements pertinent to this removal action are discussed below.

a. DDT Properties, Fate and Transport, and Investigation Protocols

DDT is an organochlorine pesticide which is highly stable in the solid phase and is persistent in the environment. It was used widely in the United States until its sale was banned in 1982. Depending on site conditions, DDT will slowly degrade into DDE and DDD, two compounds which have similar toxicities to DDT. DDT is not readily soluble in water and has a very low vapor pressure in environmental conditions, meaning it is not volatile. Particulate DDT has a very high affinity for adsorption to organic material in soil materials. Because of these properties, the primary fate and transport mechanisms by which DDT could have entered residential soils surrounding the former Montrose plant are: 1) by being carried as DDT dust or sorbed to soil dust (i.e. particulates) on wind which then settles into soils, 2) by being carried in drainage pathways as DDT particulates or sorbed to sediments, which then settle out into soils, and 3) by direct dumping of fill materials from the Montrose plant site.

In consultation with risk assessors, engineers, and statisticians, EPA designed separate investigation protocols to assess the degree to which DDT was present in residential areas from each of these three mechanisms. Samples were collected in sufficient numbers and in strategic locations to characterize each phenomenon being examined (e.g. aerial dispersion a.k.a. wind-blown dust, storm water drainage) and to evaluate potential human health risks as required by the

risk assessment. The results of the investigations are presented in the RI Addendum. EPA's investigations also targeted homegrown produce. Because it was known that DDT entered the storm water drainage from the Montrose plant site, and that this drainage entered the Kenwood Ditch, the Kenwood storm water drainage pathway was the primary drainage pathway examined in the investigation.

b. Phase I Residential Soils and Produce Investigation

In 1998 and 1999, as part of the Remedial Investigation for the Montrose Chemical NPL Site, EPA conducted Phase I of a Residential Soils and Produce Investigation (a.k.a. "Neighborhood Investigation") in a 30-square block residential area ("study area") to the southeast and southwest of the former Montrose plant property (See RI Report Addendum, Plates 3, 4 and 10). During Phase I of this investigation, EPA gathered more than 350 surface soil samples, randomly selecting four residences per block and taking 3 samples per residence sampled, in an effort to evaluate whether DDT was present due to aerial dispersion of DDT dust from the former plant at levels higher than in areas not near the former DDT plant. EPA also collected more than 70 surface soil samples in six background, or reference, areas to the north, northwest, west, southwest, and south of the former plant property (See RI Report Addendum, Plates 5 and 13). These areas were several miles from the former Montrose plant property. Also as part of the Phase I Investigation, EPA sampled homegrown produce including vegetables, fruits, and eggs. EPA also sampled borings to evaluate whether there was additional evidence of contaminated fill material from the Montrose plant property. In addition, some samples were collected in storm water drainage pathways.

c. Phase I Findings on Background DDT

Findings from data derived in the Phase I Investigation indicate that total DDT is present at low levels ubiquitously in both the six background areas as well as the 30-block study area near the former Montrose Chemical DDT plant[4]. (See RI Addendum, Plates 10 and 13) 100 percent of surface soil samples within the study area had some level of total DDT, while 91 percent of surface soil samples in the background areas had some level of total DDT. All residences, whether in the background area or the study area, had total DDT in at least one sample. Surface soil samples in the study area and not near the Kenwood storm water drainage pathway average approximately 1.8 ppm and ranged up to approximately 10 ppm (95th percentile) total DDT, whereas surface soil samples in the background area averaged 1.2 ppm and ranged up to approximately 6-8 ppm (95th percentile) total DDT.

[4]The term "total DDT" refers to the sum of the soil concentrations of all isomers of DDT and its metabolites, DDE and DDD. These compounds have similar toxicities and so are treated as a sum for the purpose of determining extent of contamination.

EPA has shown in the RI Report Addendum that the difference between the *average* of DDT concentrations in the background area and the *average* of DDT concentrations in the 30-block study area is statistically significant (See RI Addendum, Appendix J). However, the difference is exceedingly small from the standpoint of potential health risks. The reason that DDT may remain in background areas at levels similar to levels found in the 30-block study areas is that DDT was widely used in the United States until 1972 for agriculture, mosquito abatement, and for residential application to lawns and gardens. As DDT is persistent, it can still be seen in residential areas not near the Montrose plant site.

d. Phase I Findings on Kenwood Avenue, and at 20723 Kenwood Avenue

Initial Phase I data indicated that there were several residences along the west side of Kenwood Avenue where levels of DDT were significantly higher than the background samples and the samples taken in other parts of the 30-block study area. Such samples were generally on the order of several tens of ppm DDT. EPA determined that a second phase of investigation would be necessary to evaluate the nature and extent of the Kenwood Avenue contamination as a whole. One of the residences, 20723 South Kenwood Avenue, had levels of total DDT of up to 170 parts per million (ppm) in surface soils, initially, in Phase 1.

As part of Phase I, EPA conducted a more extensive investigation at 20723 Kenwood, without waiting for the planning and execution of the larger Phase II investigation for Kenwood Avenue. EPA installed and sampled 20 borings in a 20 foot grid and collected 10 surface soil samples at the 20723 Kenwood property. A total of 43 samples were collected from the property, including 5 surface soil samples from soils under the house. All samples were analyzed for total DDT.

The property at 20723 Kenwood Avenue is located on the west side of Kenwood Avenue, the second property north of Torrance Boulevard. Historic aerial photographs document that the unimproved drainage ditch (Kenwood Ditch), referenced above, passed through the eastern portion of this property in the 1940's, 1950's and early 1960's. These aerial photographs also document that storm water ponded in the low lying area of this property. Numerous accounts by long-standing residents in the neighborhood have corroborated that storm water used to pond so extensively at this property that at times the foundation was inundated to the base of the siding.

EPA found that about 2/3 of the front yard of the house, and an area covering about half of the north side yard of the house, has elevated levels of total DDT in the first 2-4 feet of soils. Upon more extensive sampling, EPA discovered levels of total DDT as high as 338 ppm in surface soils at the 20723 South Kenwood Avenue property. The affected area appears to be approximately 60 feet by 45 feet in size. Levels of DDT in the back yard and under the house were very low and do not pose a health risk.

e. Phase II Residential Soils and Produce Investigation

After a planning phase, EPA performed the sampling for the Phase II Soils and Produce Investigation in the Spring of 2000. The Phase II investigation focused largely, though not exclusively, on the Kenwood storm water drainage pathway. More than 1000 samples were collected during the phase II investigation, from more than 300 borings. Phase II was divided into two subphases, IIA and IIB. In Phase IIA, 7 transects of borings were placed and sampled perpendicular to the drainage pathway, spread evenly across the two blocks of Kenwood Avenue in the yards on the west side of the street. Each transect consisted of 4 borings spaced across the former easement within which the Kenwood Ditch was located, usually within 25 feet of the western edge of the current street. The County historically maintained an easement for maintaining the ditch for flood control, and its boundaries are known. Borings were sampled at surface, 2 feet below ground, and 4 feet below ground. Phase IIA also included borings along the storm water drainage path in historical ponding areas as identified by aerial photos and recounted by residents; these were sampled to a depth of 6 feet. Phase IIA also included many surface soil samples in the drainage pathway.

When Phase IIA samples showed relatively consistent elevated total DDT contamination in soils on the west side of Kenwood Avenue within the known historical storm water drainage pathway, EPA planned and performed Phase IIB. In Phase IIB, 23 yards along the storm water drainage pathway[5] were sampled. Each yard was sampled with a grid pattern of borings designed to evenly cover the area affected by the storm water drainage. Grid spacing was approximately 10-15 feet. The grids covered the area of the original easement for the ditch. Then, EPA continued to expand each grid westward toward the house until levels of DDT fell below about 10 ppm. Grid sampling was conducted so as to allow for property-specific human health risk calculations.

f. Summary of Phase II Results - Kenwood Storm water Pathway

The Phase II sampling (comprised of Phases IIA and IIB) revealed that soil concentrations of DDT in many of the front yards on the west side of Kenwood are elevated compared to soils not located on the Kenwood drainage pathway. Elevated DDT levels can be seen at both ends of the pathway (204th Street and Torrance Boulevard) and at multiple points in-between. There is significant variability in the concentrations of total DDT both laterally and with depth. The variability in DDT soil concentrations can be attributed, at least in part, to movement of soil:

[5] Two homes along the pathway could not be sampled because the owner refused to provide EPA with access to their property for the purpose of the sampling.

- During the construction of the Kenwood Drain (which replaced the Ditch as the mode of flood control in the late 1960s); and

- By present or past residents during the intervening years (up to 55 years) between the time of the Montrose discharges containing the DDT and the present.

These factors account for the DDT being found intermittently, in some cases at depths other than those associated with the former Kenwood Ditch, or in areas west of the original storm water easement.

For the most part, it appears that the soil that was the bottom of the Kenwood Ditch no longer exists as a single intact structure and so it is more meaningful to discuss those residual locations within each yard where the DDT-contaminated soil from the Ditch has come to be located.

Phase II samples reveal that total DDT concentrations in soil in residential front yards on the west side of Kenwood Avenue vary from non-detect to 6,700 ppm. The following represent the frequency of concentrations on the west side of Kenwood as a whole, at all depths:

Out of approximately 1000 samples,

total DDT above 17 ppm was found in ..... 115 samples (11 %)
total DDT above 35 ppm was found in ..... 74 samples (7 %)
total DDT above 170 ppm was found in ..... 19 samples (2 %)
total DDT above 500 ppm was found in ..... 6 samples (0.6 %)
total DDT above 1000 ppm was found in ..... 4 samples (0.4 %)

Out of 23 yards sampled by EPA on the Kenwood storm water drainage pathway, the maximum total DDT concentrations (when considered yard-by-yard) were:

above 17 ppm in ..... 16 yards
above 35 ppm in ..... 14 yards
above 170 ppm in ..... 6 yards
above 500 ppm in ..... 6 yards
above 1000 ppm in ..... 4 yards

These results provide perspective to the sampling results. However, the yard-by-yard exposure point concentrations and health risk estimates calculated by EPA's human health risk assessment (Appendix K of the RI Addendum) are based on the distribution of total DDT in each particular yard. These values are more germane to potential human health risk than is the percentage of samples above a given concentration overall. Also, while the borings were placed with relatively good coverage throughout the affected area in each yard, it is not possible to

sample in every location. The human health risk assessment uses statistical techniques to account for this fact. These techniques adjust the exposure point concentration based on the number of samples taken and the variability in the data in any given yard. A summary of human health risk estimates are provided in this Action Memorandum in Section III.

The majority of the elevated total DDT concentrations in soil on the west side of Kenwood Avenue occur in soils at approximately 2 feet below ground surface. Concentrations of total DDT in subsurface soils (e.g. at 2 feet or 4 feet below ground surface) are, on average, higher than are concentrations in surface soils.

Soil samples taken from the east side of Kenwood Avenue, including samples in former ponding locations on the east side, indicate that total DDT concentrations are ***not*** higher in soils on the east side than in other areas outside the Kenwood storm water drainage pathway.

2. Physical Location

Kenwood Avenue is located in unincorporated Los Angeles County between the cities of Torrance and Carson. Properties on this street bear a Torrance address. This area is called the "Harbor Gateway."

The north end of Kenwood Avenue is one block south via Normandie Avenue and one block east via West 204th Street from the southeast corner of the former Montrose plant property at 20201 South Normandie Avenue. Kenwood Avenue is two blocks long and is bisected by Milton Avenue. Historically, storm water drainage with Montrose contaminants likely followed a similar path and/or travelled under Normandie Avenue to locations north of 204th Street where it flowed to the head of the Kenwood Ditch via an unimproved channel and culvert.

3. Site Characteristics

The area subject to this removal action applies to the Kenwood storm water drainage from the former Montrose DDT plant. This drainage lies primarily in front yards on the west side of South Kenwood Avenue. It also extends to one property on Torrance Boulevard and four properties on West 204th Street. This area lies in an unincorporated island of Los Angeles County, immediately adjacent to an industrial zone within the City of Los Angeles. This zone lies to the north and west. The former Montrose plant was part of this industrial zone. There are several refineries and chemical plants in the general vicinity. Current property values average approximately $140,000 - $180,000 without accounting for contamination. Kenwood Avenue lies in a largely working class neighborhood. Better than 60% of the residents are Latino; some speak only Spanish, others are bilingual. A large percentage of residents own their property. The owner resides at the property at 21 of the 25 homes within the storm water drainage pathway. The age of persons in the neighborhood varies; there are many young children and families as well as elderly persons. Similarly, the amount of time people have lived in the

neighborhood varies from less than a year to more than 30 years. Many families tend to be extended; that is, three generations may live in the same household.

Kenwood Avenue remains the lowest elevation in the surrounding terrain. Unlike adjacent streets in the neighborhood, Kenwood Avenue winds back and forth as if following a former creek bed. The property lots on the west side of the street are double lots; they are deep enough to have two houses built on them. Aerial photographs show that, in the 1950s, most of the lots had houses only on the back (western) portion of the lot. In the intervening period, second houses were built on the front (eastern) portion at about half of the lots. Today, many of the properties have more than one address on the same lot.

The front yards at five of the 11 properties with Kenwood addresses north of Milton Street, including 20429, 20433/20437, 20501, 20507/20509, and 20513 South Kenwood, have previously received soil brought in from outside sources. At each of these properties, the front yard does not slope significantly from the house to the street. A 2-4 foot high retaining wall separates the yard from the sidewalk at the front of the yard, with an attending drop in soil elevation. It appears that some residents used soil from the construction of the Kenwood Drain; others did not. EPA adjusted the sampling depth of its soil borings depending on the apparent depth of this soil material. At some properties, certain borings were extended from 4 to 6 feet below ground surface, and at one property, to 8 feet below ground surface.

There is a grass median between the sidewalk and the street in front of the properties on Kenwood Avenue north of Milton Avenue. South of Milton avenue, the median is alternately grass and concrete or brick. Most properties have driveways, usually constructed of concrete. Many properties are enclosed by fencing in the front yard.

The properties 1203 W. 204th Street and 1187 W. 204th Street are aligned perpendicular to the properties on the west side of Kenwood and are situated on either side of a former unimproved channel which carried water mixed with wastes from the Montrose site. In these two cases only, the former storm water drainage pathway runs from the rear to the front of the property. EPA's data indicate that most of the soil under the former channel, which was very narrow, was removed when the Kenwood Drain was installed at this location in the mid-1970s.

Properties on Kenwood Avenue south of Milton Avenue, between 20603 South Kenwood and 20627 South Kenwood, are built into a natural hillside. Some of these properties have terracing leading up to the front door of the house. The properties south of 20627 South Kenwood sit on relatively flat ground. Only four of 25 properties in the Kenwood drainage pathway do not have fencing in the front yard.

Best available information, including data from aerial photos, indicates that the Kenwood Ditch was located about 30 feet west of the former west edge of Kenwood Avenue. Kenwood Avenue has been widened in the intervening time period, and the Kenwood Drain was installed.

The Kenwood Drain lies under Kenwood Avenue in the northern portion of Kenwood Avenue, and then swings westward at about 20513 Kenwood, elbows back parallel to Kenwood Avenue, and then intersects each front yard on the west side of the street as it passes southward toward Torrance Boulevard. It appears that the former ditch was located within about 20-25 feet west of the present western edge of Kenwood Avenue. EPA has used as-built engineering drawings for the Kenwood Drain to locate the easement boundary for the Kenwood Ditch, which is another 10 feet west of the likely location of the Ditch.

4. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

The substances of concern for this response action are DDT, DDE and DDD; and also the all isomers of the pesticide BHC (manufactured by a small plant within the Montrose plant and operated by Stauffer Chemical Corporation, a parent of Montrose). All of these are "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14), and 40 C.F.R. Section 302.4 and Table 302.4.

The presence of DDT, DDE, DDD and isomers of BHC in the soil at 20723 Kenwood constitutes an actual or threatened release of hazardous substances into the environment, as defined by Section 101(22) of CERCLA, 42 U.S.C. Section 9601(22).

EPA's investigation shows concentrations of DDT in soil in yards on the west side of South Kenwood Avenue at concentrations up to 6,700 ppm. Substantial evidence documents the existence and route of the former storm water drainage pathway and that hazardous substances released by Montrose Chemical or Stauffer Chemical Company at the former Montrose plant property were released into this pathway. Most of the yards in the Kenwood residential storm water pathway have soils that exhibit measured total DDT concentrations (tens to hundreds of ppm, and in a few cases, over a thousand ppm) that clearly exceed background levels of total DDT (1-3 ppm, ranging up to 10 ppm).

5. NPL Status

The Montrose Chemical Superfund Site was placed on the NPL by rule in 1989.

6. Maps, Pictures and other Graphic Representations

Numerous figures, maps and graphics of Kenwood Avenue are located in the RI Addendum. Included are maps of the area, plots of all chemical data and boring locations, a "mosaic plot" of filled in concentration contours, a map showing calculated risk levels on a yard-by-yard basis, whisker plots of yard-by-yard data distributions, and many other evaluations.

E. OTHER ACTIONS TO DATE

As the removal action requested by this Action Memorandum addresses the Kenwood storm water drainage pathway, only actions relative to that pathway are discussed in this section.

1. Previous Actions

As previously mentioned, in July 1999, after completing the first phase of its investigation along Kenwood Avenue, EPA found levels of DDT at one property, 20723 Kenwood Avenue, at levels much higher than any other property in the neighborhood. While a second phase of sampling focused primarily on Kenwood Avenue was underway, EPA performed an expedited sampling of a grid of borings at the 20723 Kenwood Avenue property. Laboratory results from this sampling indicated total DDT levels up to 338 ppm. EPA approached the owners and tenants at the property and proposed to install a temporary cover over the portion of the property with elevated levels of DDT. The purpose of the cover was to prevent any possible continued exposure of the residents, including children, to surface soils in the portion of the yard that contained elevated levels of total DDT. EPA proposed to install the cover as a temporary measure until EPA could determine the nature and extent of total DDT contamination on the west side of Kenwood Avenue overall. EPA believed that a single action for the entire street would be more effective and efficient than taking an action at only one property. In the meantime, the temporary cover could provide the residents at 20723 South Kenwood with protection from DDT exposure.

After receiving the agreement of the owner and tenant to proceed, EPA installed a temporary cover consisting of a layer of black fine plastic mesh overlain by a layer of overlapped artificial turf, and held in place with approximately 1000 metal 6 inch staples which were hammered into place. The main cover measures about 45 feet by 60 feet, covering approximately 2700 square feet of soils with elevated total DDT levels (there is a smaller cover also next to the north side of the house). This cover prevents dust from rising to the surface and prevents direct contact with soils; at the same time it allows percolation of rainwater and prevents drainage problems posed by plastic covers. Approximately 100 cement paving stones were brought in to hold the cover down around the driveway. Gravel was brought in to cover the walkway from the driveway to the porch, and a wood chip ground cover was placed in the flowerbeds. This action has effectively eliminated immediate exposure of the residents to elevated levels of total DDT in surface soils; however, the action was intended to be temporary and the cover is not indefinitely durable; it is expected that the effectiveness of the cover could be compromised if additional action is not taken in the near future.

In April 2001, EPA signed an Action Memorandum in which the resident of 20723 Kenwood Avenue will receive temporary relocation benefits and be temporarily relocated. At the same time, EPA intends to lease the property for use as a community outreach center and daytime staging area during the removal action requested in this Action Memorandum.

2. Current Actions

No cleanup operations have yet been undertaken for the Kenwood storm water drainage pathway other than the temporary cover at the 20723 South Kenwood property. The action documented and requested in this Action Memorandum is consistent with and will supplement any subsequent response action selected by EPA for the Montrose Chemical Superfund Site.

EPA has performed and is performing extensive outreach to the affected community in this case. When performing a time critical removal action, EPA is not required to perform certain community outreach activities. However, EPA has used its discretion in this case to include certain activities in order to afford the community a greater degree of input and understanding of EPA's activities. These community outreach activities include but are not limited to:

a. Public workshops and meetings with presentations on EPA's activities, findings, and approach;

b. Informal gatherings at homes along the street to answer questions and present posters, boards, and other information;

c. Door-to-door visits to explain EPA's sampling approach, sampling results, potential health risks, and related information;

d. Issuance of a fact sheet on EPA's investigation;

e. Issuance of "Field Updates," mini-fact sheets that inform residents of what is happening during the course of the investigation;

f. Customized information packets, presenting sample results, sampling locations, discussion of sampling activities and findings, and discussion of potential health risks and how soil in a resident's yard compares to EPA's risk range;

g. Completed Remedial Investigation addendum with human health risk assessment in accordance with EPA's Risk Assessment Guidance for Superfund (RAGS, including Part D);

h. Briefings for TAG recipient group Del Amo Action Committee and briefings for the TAG advisor;

i. Hiring of an expert independent relocation advisor to listen to and serve community needs;

j. Development of "Responding to You" flyers which contain questions and answers to commonly asked questions in six different categories;

k. Development of a detailed work plan for the removal action, and development of "resident specific work plans" with all work plan information specific to the each individual property;

l. Both a public meeting and door-to-door visits to explain the work plans, obtain resident input on the restoration of their yard, solicit and address community concerns and questions.

Where appropriate and necessary, materials have been translated into Spanish and/or a Spanish translator has been available.

F. ROLES OF STATE AND LOCAL AUTHORITIES

1. State and Local Actions to Date

The California Department of Toxic Substances Control is serving as a support-agency for the Montrose Chemical NPL Site remedial investigation and feasibility study, including the Residential Soils and Produce Investigation which has evaluated the contamination along the Kenwood Avenue former storm water drainage pathway. EPA has also consulted with the Agency for Toxic Substances Disease Registry (ATSDR), the California Department of Health Services and other state and local agencies regarding DDT contamination along Kenwood Avenue.

The ATSDR has performed sampling of home-grown free-range chicken eggs in the 20-block study area and has made these results available to EPA.

Between 1996 and 1999, ATSDR funded a clinic, run by the University of California at Irvine (UCI), for residents of the 30 square block study area. The purpose of the clinic was to screen residents complaining of symptoms for ailments which could be due to environmental exposure to contaminants and to provide counselling to the residents to find appropriate health care. More than 700 people were seen by the clinic while it was in operation.

The clinic was not designed to be an epidemiological study. However, UCI issued a report with generalized statistics and findings (individual results were kept medically confidential and were not released). One of the findings of this report was that, when statistics are adjusted to remove data for persons who had worked at Montrose and who had lived in countries where DDT is still in use, the levels of DDT in blood among clinic visitors was no higher than the U.S.

average. This is one indicator that elevated exposure to DDT may not be presently occurring in the 30-block study area. The clinic was unable to isolate data for persons on Kenwood Avenue from the average, however.

The California Department of Health Services has issued a fact sheet advising residents in the 30-block study area about risks related to consumption of free range chicken eggs. EPA provided input on this fact sheet.

State agencies have not taken response actions related to soils on Kenwood Avenue.

2. Potential for Continued State/Local Responses

Neither the state nor local agencies have funds to implement the recommended removal action. It is anticipated that these agencies will remain in a support role to EPA with EPA as the lead agency for the Superfund response at the site. The Department of Toxic Substances Control has identified Applicable or Relevant and Appropriate Requirements (ARARs) on behalf of the State of California.

III. Threats to Public Health or Welfare or the Environment and Statutory and Regulatory Authorities

A. ACTUAL OR POTENTIAL EXPOSURE TO HAZARDOUS SUBSTANCES BY NEARBY POPULATIONS

EPA has performed a human health risk assessment (HRA) for the Kenwood storm water drainage pathway in accordance the Risk Assessment Guidance for Superfund (RAGS). This HRA is Appendix K of the RI Addendum. The HRA documents the excess future health risks, due to potential exposure to DDT and other Montrose contaminants, to a reasonable maximally exposed individual living on the Kenwood storm water drainage pathway.

The primary exposure pathway by which persons may be exposed to DDT in soils in residential yards in the Kenwood storm water drainage pathway is by ingestion. This may occur when a person brings hand to mouth after contact with soils or dust contaminated with DDT. Ingestion may also occur when a person breathes dust containing DDT, after which the dust is trapped in the mucosa and swallowed. Children are likely to swallow more soil or dust from a yard during play activities than are most adults. EPA's risk assessments account for the potential for childhood chemical exposure.

Soils that are on the surface are covered by grass or other groundcover at most residences at present. Uncovered surface soils, if they contain DDT, can be routes of exposure to DDT. Soils not on the surface (e.g. at depths such as 2 or 4 feet below ground surface) can be routes of exposure in the future if the soils are dug up and brought to the surface.

On a residence-specific basis, EPA evaluated the potential health risks to a reasonable maximally exposed (RME) residential individual living in the Kenwood storm water drainage pathway. Such evaluations are based on a body burden as calculated assuming ingestion of soil daily for a period of 30 years over a lifetime. Child exposure is addressed and incorporated in such calculations.

Because so many sample data were available in this case, EPA used statistics on the mean, rather than solely maximum values, in calculating exposure point concentrations (EPC) in the risk assessment. RAGS supports this approach. The distribution of sample results in each yard was characterized (normal, lognormal, or neither) and exposure point concentrations were based on the 95% upper confidence limit (95% UCL) on the mean. This is the value for the mean at which one can be sure with 95% confidence that the true mean is not higher. The 95% UCL takes into account the number of samples taken in a given yard, and the variability in the data. Yards with fewer samples or more variability will result in higher estimates of the EPC due to uncertainty in the data than will yards with more samples or less variability.

For risk purposes, EPA divided each property in the storm water pathway into one or more risk management areas, called "polygons." Most properties had one risk management polygon, located in the front yard. However, some properties had, for example, one risk management polygon for the front yard and one for a side yard. It was assumed each resident spends all of his time over the 30 year lifetime period in this risk management area. These areas were generally defined to be the area within which concentrations in the front yard were elevated. This area, in turn, defines the residual impact of the former Kenwood ditch. Risks were calculated separately for each risk management polygon.

The following table shows various residential risk values, due to direct exposure to soil, and the corresponding exposure point concentrations, based on toxicity information for DDT available to EPA as of this Action Memorandum.

Risk Level ‡	Corresponding total DDT✳ Exposure Point Concentration (ppm)*†
10^{-6} Cancer Risk	1.7 ppm
10^{-5} Cancer Risk	17 ppm
Noncancer Hazard Index of 1	35 ppm
10^{-4} Cancer Risk	170 ppm
Noncancer Hazard Index of 5	175 ppm

✳ Total DDT is the sum of DDD, DDE, and DDT and related isomers.

* The exposure point concentration is not based on single point sample results but on a 95% upper confidence limit on the mean of the distribution of the data.

† EPA's risk range encompasses the range from 10^{-6} to 10^{-4}, or one in a million to one in ten thousand chance of excess cancer due to DDT over a lifetime. EPA begins to note a concern for non-cancer health effects at a hazard index of 1 (unity).

‡ It is noted that in the HHRA, EPA accounted for *all* Montrose-related contaminants. The vast majority of the contaminants found were total DDT. The exposure point concentrations shown on the right above are for comparison purposes only and correspond to the risks shown on the left only in the situation where total DDT is the only compound present.

Three different risks were calculated for each risk management polygon at each property:

1. Risk based on data taken only from the top six inches of soil. This provides an estimate of risk of adverse health effects if there were lifetime exposure to soils as they exist today, *without* ground cover.

2. Risk based on data from the top two feet of soil. This provides an estimate of future risk of adverse health effects if soils within the first two feet of soil were brought to the surface and left unexposed followed by lifetime exposure to those soils, *without* ground cover. This scenario covers tilling the soil, small construction projects, etc.

3. Risk based on data from all the soil samples in the yard (usually as deep as 4 feet, but in some cases 6 or 8 feet). This provides an estimate of future risk of adverse health effects if soils anywhere in the soil column sampled were brought to the surface and left unexposed followed by lifetime exposure to those soils, *without* ground cover. This scenario covers installation of deep foundations, basements, or major excavating construction projects.

The assumptions made in EPA's risk calculations are designed to be health protective and to provide margins of safety to address uncertainties in knowledge about chemical toxicity and

about environmental concentrations at any given location. Also, EPA's risk calculations assume a reasonable maximally exposed (RME) individual (e.g. there is no ground cover, persons spend all of their time in the yard, persons swallow soil every day, persons stay for 30 years, etc.).

The following table provides counts of the number of properties in the Kenwood storm water drainage pathway that exceed various risk levels due to total DDT and other Montrose-related contaminants in soils. 23 properties were sampled.

Lifetime RME Cancer Risk Level	Corresponding Lifetime RME Non-Cancer Hazard Index	No. of properties exceeding risk level in *SURFACE* soil	Number of Yards exceeding risk level at *ANY* of the three soil depth intervals for which risks were calculated
10^{-4}	5	2	3
10^{-5}	0.5	8	12
10^{-6}	0.05	23	23
2×10^{-5}	1	6	10

There are 7 properties with one or more measured sample points at any depth exceeding 170 ppm; 3 properties exceeding 1000 ppm.

Because DDT has proven to be highly persistent in the environment, future residents of Kenwood Avenue may encounter similar DDT concentrations to those seen today if no action is taken.

Based on the above estimates and information, EPA believes that response actions are necessary to prevent actual or potential residential exposure to the DDT in soils in the Kenwood storm water drainage pathway, both presently and in the future. (See Attachment 1, Memorandum to Montrose File from Serda, Regional Toxicologist).

IV. Endangerment Determination

Actual or threatened releases of hazardous substances found in soils at residential properties along the Kenwood storm water drainage pathway, if not addressed by implementing the removal action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. Proposed Actions and Estimated Costs

Under this Action Memorandum, the following removal action will be performed. It is noted that the properties subject to the removal action are defined in section A2 and A4 below and are shown on Figure 3. The area within these yards that is subject to the excavation is generally within the front yards of these properties and is defined by sampling results and the location of the former ditch. This area will be defined specifically in EPA's Work Plan for the removal action.

A. PROPOSED ACTIONS

1. Removal Action Synopsis

Under this removal action, soils at unacceptable levels contaminated with DDT due to storm water runoff from the operations of the former Montrose Chemical DDT plant at 20201 South Normandie Avenue will be removed from residential yards in the Kenwood storm water drainage pathway. A list of the yards subject to the removal action, and the criteria determining the soils to be removed, are shown in subsequent subsections. The soils will be excavated from their current location and replaced with clean soil and compacted. In this process, certain features of each yard will be demolished or moved. When the excavation and backfill of soil is completed, each yard will be restored. Items will be replaced with features in-kind. Restorations will meet current local building codes. It is anticipated that this removal action can be completed safely and effectively without relocation of residents. Temporary relocation will be offered to residents, however, based on request and need. Waste soil excavated will be transported by covered truck to the former Montrose plant property, and temporarily stored there in sealed containment cells in accordance with the legal requirements for the storage and management of hazardous waste. As a contingency, the soil may be transported to a permitted hazardous waste facility in compliance with EPA's CERCLA Off-site Policy, and incinerated.

2. Tier 1 Properties: Standards for Taking Action

EPA has defined two tiers of properties to which this removal action shall apply. Tier 1 properties are those within the Kenwood storm water drainage pathway in which EPA's human health risk assessment has estimated risks that exceed the standards below. EPA has identified and calculated potential excess long term health risks due to Montrose contaminants in soil at Tier 1 properties that are sufficient to warrant the removal action. The term "Montrose contaminants" as used here includes total DDT, all isomers of BHC, and chlorobenzene (this definition of this term is limited solely to this document).

Tier 1 Properties Standards for Taking Action
(Removal Based on Risk Calculation)

A property shall be subject to this removal action and the Tier 1 cleanup standards if any one of the following standards is met for any risk management polygon in EPA's HRA for that property:

1. The excess cancer risk due to Montrose contaminants in ***surface soil*** exceeds one in one hundred thousand ($1x10^{-5}$); or

2. The excess cancer risk due to Montrose contaminants within the ***first two feet of soil*** exceeds one in one hundred thousand ($1x10^{-5}$); or

3. The noncancer hazard index due to Montrose contaminants ***over the maximum depth sampled*** (i.e., from all samples from all depths) in the yard exceeds a value of 1; or

4. Any single soil sampling result exceeds a noncancer hazard index of 10.

For yards where total DDT is the only contaminant or the overwhelmingly predominant contaminant (true for most yards), these standards will have these direct corollaries:

1. The exposure point concentration (EPC) of total DDT for ***surface soil*** exceeds 17 ppm; or

2. The EPC of total DDT within the ***first two feet of soil*** exceeds 17 ppm; or

3. The EPC of total DDT ***over the maximum depth sampled*** exceeds 35 ppm; or

4. Any single soil sampling result exceeds 350 ppm total DDT.

Exposure point concentrations (EPCs) are calculated in EPA's HLA and represent the environmental concentration of total DDT assumed to be present in determining the risk (See Section III above). The EPC is based on a health conservative estimate using the results of all the samples over the depth interval discussed.

As described earlier, most yards have only one risk management polygon in EPA's Risk Assessment. However, some yards have two polygons (for example, front and side yard). The above standards shall be applied to each risk management polygon within a yard independently. As discussed above, risk management polygons were determined by first defining the area in the

yard over which the influence of the former Kenwood Ditch contamination is present. EPA sampled in a grid pattern covering the former drainage easement for the Kenwood Ditch; the grid was extended westward until concentrations of DDT fell below 10 ppm. The resulting grid determined the size and shape of the risk management polygon for that yard.

The following properties have one or more polygons meeting the above criteria and represent Tier 1 properties. Some properties have more than one address as multiple dwelling units may be present on these double-deep lots.

Tier 1 Properties Subject to Removal Action

- 1202 W. 204th Street
- 20421/20423 South Kenwood Avenue
- 20433/20435/20437 South Kenwood Avenue
- 20519/20523 South Kenwood Avenue
- 20529/20531 South Kenwood Avenue
- 20535 South Kenwood
- 20603 South Kenwood
- 20615 South Kenwood
- 20703 South Kenwood
- 20709 South Kenwood
- 20713 South Kenwood
- 20723 South Kenwood

3. Tier 1 Properties: Standards for Cleanup

Excavation shall occur at Tier 1 properties to remove total DDT-contaminated soil. Initially, excavation shall encompass the contiguous area or areas within the risk management polygon(s) which has (have) concentrations of total DDT exceeding 10 ppm. Where the contamination shows no trends, all soils within the area of the front yard that was sampled shall be excavated. In all cases, the excavation shall *at a minimum* encompass the area in which the historical flood control easement for the Kenwood Ditch intersected the property, to a depth of 2 feet below ground surface.

While the excavation is open, samples will be collected from the sides and bottom of the excavation. These samples will be used to confirm that the excavation is complete. If concentrations above 10 ppm are still present, the size of the excavation will be extended until levels below 10 ppm are found. Field screening techniques may be used, however, the final set of samples will be confirmed by laboratory sampling.

The portion of driveways within the excavation area will be removed and excavation will progress under the driveway to the same depth as that attained next to the driveway. Confirmation sampling will ensue as in the remainder of the excavation area.

In virtually all cases, DDT levels fall off as one moves toward the houses on Kenwood Avenue. It is not presently anticipated that elevated levels of DDT will be found under houses. This cleanup standard does not apply to soil under houses and excavation under houses is not covered by this Action Memorandum.

Excavation shall be limited to a depth of 6 feet under this Action Memorandum. It is extremely unlikely that residents or others would excavate and bring soils to the surface from below this depth.

Sidewalk and median areas associated with Tier 1 properties shall be addressed independently, in accordance with subsection 5 below.

4. Tier 2 Properties: Standards for Action and Cleanup

Tier 2 properties are those within the Kenwood storm water drainage pathway in which EPA's human health risk assessment has not estimated risks that exceed the standards for taking action under Tier 1. These are the balance of homes in the pathway not included in Tier 1. EPA recognizes that the former drainage pathway passed through all the yards in the Kenwood storm water drainage pathway, and that substantial quantities of waste water and storm water containing hazardous substances were released from the Montrose Chemical plant property into this pathway. Based on these facts and circumstances, EPA believes that it is appropriate to ensure that the original drainage pathway is removed. While EPA's sampling has been extensive, it is still possible that some DDT has been missed in EPA's sampling. Under this removal action, EPA will offer homeowners of Tier 2 properties the option of extending the removal action to their property. The original storm water drainage pathway lay within the former flood control easement for the Kenwood Ditch, the boundaries of which are known to EPA based on engineering drawings for the Kenwood Drain. The response action at Tier 2 properties affords an added margin of protectiveness to the response action at Tier 1 properties by ensuring that soils within the Kenwood storm water drainage pathway are removed to a reasonable minimum depth. Properties subject to Tier 2 removal standards are shown in the table below.

Excavation shall occur at Tier 2 properties to remove total DDT-contaminated soil. Initially, excavation shall encompass the area in which the historical flood control easement for the Kenwood Ditch intersected the property, to a depth of 2 feet below ground surface. The excavation may be deepened at discrete locations to remove individual points of elevated concentration ("hot spots") as indicated by previous sampling. A contiguous area for excavation

at points greater than 2 feet will not be identified as with Tier 1 properties. Attempts will be made to adjust the depth of the excavation to be less than the depth of buried utilities such as water, gas, and sewers, where these exist.

While the excavation is open, samples will be collected from the sides and bottom of the excavation. These samples will be used to confirm that the excavation is complete. If concentrations above 10 ppm are present, the size of the excavation will be extended until levels below 10 ppm are found. Field screening techniques may be used, however, the final set of samples will be confirmed by laboratory sampling.

The portion of driveways within the excavation area will be removed and excavation will progress under the driveway to the same depth as that attained next to the driveway. Confirmation sampling will ensure as in the remainder of the excavation area.

It is not presently anticipated that elevated levels of DDT will be found under houses. This cleanup standard does not apply to soil under houses and excavation under houses is not covered by this Action Memorandum.

Excavation shall be limited to a depth of 6 feet under this Action Memorandum. It is extremely unlikely that residents or others would excavate and bring soils to the surface from below this depth.

Sidewalk and median areas associated with Tier 2 properties shall be addressed independently, in accordance with subsection 5 below.

Tier 2 Properties Potentially Subject to Removal Action

- 1187 W. 204th Street
- 1203 W. 204th Street
- 1206 W. 204th Street
- 20411/20413 South Kenwood Avenue
- 20417/20419 South Kenwood Avenue
- 20429 South Kenwood Avenue
- 20501/20503 South Kenwood Avenue
- 20507/20509 South Kenwood Avenue
- 20513 South Kenwood Avenue
- 20609 South Kenwood Avenue
- 20619 South Kenwood Avenue*
- 20627 South Kenwood Avenue*
- 1209 South Kenwood Avenue

*These properties were not sampled in EPA's investigation as the property owners did not provide property access.

5. Median and County Areas: Standards for Action and Cleanup

The sidewalk and grass median (area between sidewalk and street) on the west side of Kenwood Avenue are owned by the County of Los Angeles. The medians were sampled along the west side of Kenwood in front of 15 yards. Medians in front of the other 10 yards in the Kenwood storm water drainage pathway either did not exist or were covered with concrete and were not sampled. Samples from the median in EPA's investigation were not included in the risk calculations for residents' yards. Risks attributed to such samples were addressed on a screening basis in EPA's HRA. The same applies to the asphalt alleyways intersecting Kenwood Avenue between 1202 W. 204th and 20411/20413 South Kenwood Avenue, and between 20713 South Kenwood Avenue and 20723 South Kenwood Avenue. DDT contamination is present in median areas at widely varying levels. Samples indicate that total DDT is generally present at levels exceeding 10 ppm.

Median and County areas within the Kenwood storm water drainage pathway shall be addressed independently of the Tier 1 and Tier 2 properties and the corresponding standards for action and cleanup for those properties.

Excavation shall occur in the median and under the sidewalk to a minimum of two feet in depth. The excavation may be deepened to excise "hot spots" as identified by EPA's previous sampling.

There is a water main under the sidewalk most of the way down the west side of Kenwood Avenue, and the Kenwood Drain itself lies near the street and median. These two structures will *not* be removed/excavated under this removal action. Excavation will occur above and to the side of these two structures where they occur. While the excavation is open, samples will be collected from the sides and bottom of the excavation. These samples will be used to confirm that the excavation is complete. If concentrations above 10 ppm are present, the size of the excavation will be extended until levels below 10 ppm are found. Field screening techniques may be used, however, the final set of samples will be confirmed by laboratory sampling.

Excavation shall be limited to a depth of 6 feet under this Action Memorandum. It is extremely unlikely that residents or others would excavate and bring soils to the surface from below this depth.

6. Standards for Imported Soil

Soil backfill to be brought into yards shall be tested at a minimum for pesticides, volatile organics (VOCs), semivolatile organics (SVOCs), metals, polyaromatic hydrocarbons (PAHs), and BTEX (petroleum) compounds. EPA shall obtain imported soil from an area which, based on knowledge of its history, is not located in a known industrial or agricultural area. EPA shall verify previous sampling and take additional confirmation sampling for industrial and agricultural contaminants and metals (metals can be naturally-occurring). Imported soil shall meet EPA Residential Soil Preliminary Remediation Goals (PRGs) with respect to all contaminants tested, except for arsenic, which shall meet a standard of 4 parts per million (ppm). This is a conservative value for the average of naturally-occurring arsenic in California soils.

7. Rationale for Selection of Action and Cleanup Standards

The cleanup standards and standards for action discussed above are protective with respect to human health. At the conclusion of this response action, the elevated and unacceptable potential health risks from soils with DDT will be eliminated.

a. Risk Assessment Calculations and Assumptions

EPA's risk assessment is based on chronic lifetime exposure to DDT. It is also based on standard residential reasonable maximum exposure assumptions (RME). Among these are the assumptions that residents swallow 100 mg (200 mg for children) of soil every day for 30 years in a lifetime, that all ingested DDT is absorbed by the body, that soils are exposed and available

for exposure, and other similarly health-protective assumptions. For non-cancer effects, a safety factor of 100 is applied to the No-Observed-Adverse-Effect-Level based on toxicological studies. The Risk assessment is based on the most sensitive end points. Exposure Point Concentrations are based on the 95% upper confidence limit on the mean. This approach is supported by EPA guidance, is conservative with respect to risk estimation, and is appropriate given the fact that there are a number of data for each yard. The risk values when computed this way are designed to err on the side of health protectiveness.

Residential soils are present, by definition, where people live and make their home. A high degree of protectiveness is called for under these circumstances. The assumptions and calculations used in the risk assessment are of this caliber and ensure that the extra appropriate degree of protectiveness is built into the risk estimates themselves.

b. Rationale for Tier 1 Standards for Taking Action

Tier 1 properties require action based on potential health risk estimates. As discussed earlier, there is a background level of DDT in soils from historical use of DDT in the south L.A. area averaging 1-3 ppm, with the 95th percentile at about 6-8 ppm. Within the 30-square block area near Montrose, outside of Kenwood, DDT in soils similarly averages 1-3 ppm, with the 95th percentile in the data at about 8-10 ppm. When defining a risk-based standard for action along the Kenwood storm water drainage pathway, it is important to use a protective standard within EPA's risk range that can be distinguished from background DDT and is attributable to the Montrose Chemical site. Using 10^{-5} as a risk level for taking action under Tier 1 is appropriate for this purpose. This risk level is within EPA's risk range but above the level of background DDT.

This Action Memorandum defines four risk standards for Tier 1, any of which can trigger action. These are designed to ensure that a cleanup is triggered when risk is sufficiently high under any of three possible scenarios of chronic exposure to soils:

- Direct exposure to soils at the surface today (and in the future if no disturbance of soil occurs);
- Exposure to soils brought to the surface and mixed from a depth of up to 2 feet – this addresses the potential for minor construction activities such as tilling, piping, footings, or altering yard elevation; and
- Exposure to soils brought to the surface and mixed from a depth of up to 4-6 feet – this addresses the potential for more major construction activities such as construction of buildings or swimming pools.

The standard for a single point ensures that action is triggered in the unlikely situation that the contamination is extremely limited in space yet high enough to pose an acute health risk from casual contact. DDT is not generally expected to pose an acute risk until persons are exposed to soil concentrations of at least 1000 ppm. A conservative chronic surrogate for acute health effects is a hazard index of 10; in this case, 350 ppm total DDT. This level is also the World Health Organization reference value for DDT in countries outside the United States.

By using the refined and multiple standards for action, and ensuring that action standards are well within EPA's risk range, Tier 1 action will be protective with respect to DDT in residential soil.

c. Rationale for Tier 2 Standards for Taking Action

Tier 2 properties do not require action based on the Tier 1 criteria. However, because these residential properties lie within the pathway, and it is known that Montrose contaminants traversed the pathway along its length at some point in the past, soils within the known historical drainage pathway easement will be removed as an added measure of protectiveness. This will ensure that contaminant remnants of the drainage within a readily available depth of 2 feet below the surface that may not have been detected by the sampling are removed. In addition, confirmation sampling will be performed for Tier 2 properties and the excavation can be extended if indicated necessary by the sampling. The Tier 2 standards will, in most cases, result in less soil removed from a property than will the Tier 1 standards because sampling indicates these properties are less contaminated. Nonetheless, the Tier 2 action will enhance the protectiveness of the removal and help to ensure that this removal action is the only response action required along Kenwood Avenue.

d. Rationale for 10 ppm As The Cleanup Level

Using 10 ppm as the cleanup level will ensure that all soil remaining in yards that are subject to this removal action is similar to the background range for DDT. Any potential chronic residual soil risks from DDT remaining after the removal action (based on averaging over the yard) will be less than or similar to that posed by background. Background risks from DDT in the south L.A. area are low and at the low end of EPA's risk range.

EPA's risk guidance typically estimates lifetime risks using an *average* of soils in the yard. A uniform soil concentration of 10 ppm total DDT in residential soils would represent a risk of 6×10^{-6}, which is at the low end of EPA's risk range. However, in cleaning all individual points in each yard at or above 10 ppm, the vast majority of soil points in each yard will be significantly lower than 10 ppm. Because risks are based on average concentrations, the remaining residential RME risk after the cleanup will not exceed 6×10^{-6} but will likely be close to 1×10^{-6}.

Thus, after the removal action, properties in the Kenwood storm water drainage pathway can be considered usable for residential purposes without restriction.

8. Basis for Not Selecting Permanent Relocation as a Response Action

This Action Memorandum requests a response action to be performed under Removal Authority. The preamble to the National Contingency Plan (50 *Federal Register* 37625, September 16, 1985) states "[t]here are certain situations where EPA's removal authority does not extend, e.g., permanent relocation cannot be performed as part of a removal response." A permanent relocation of residents is not permitted under the authority being used in this case.

However, authority or lack of authority to perform a permanent relocation is not the reason that EPA has selected the use of removal authority in this case. In fact, EPA would not have selected permanent relocation as a response action even if remedial authority were being used. *EPA Interim Policy on the Use of Permanent Relocations as Part of Superfund Remedial Actions* [OSWER Directive 9355.0-71P, EPA 540F-98-033, PB98-963305] provides EPA's policy on the situations in which permanent relocation may be considered when using remedial authority. This policy states,

> „EPA's preference is to address the risks posed by the contamination by using well-designed methods of cleanup which allow people to remain safely in their homes and businesses. This is consistent with the mandates of CERCLA identified above, and the implementing requirements of the NCP which emphasize selecting remedies that protect human health and the environment, maintain protection over time, and minimize untreated waste.
>
> Because of CERCLA's preference for cleanup, it will generally not be necessary to routinely consider permanent relocation as a potential remedy component...

The policy states the situations in which permanent relocation may be considered. The Kenwood storm water drainage pathway does not fit the situations discussed in the policy. Because of this, even if this were a remedial action, the present situation would lie outside EPA's policy for use of permanent relocations. EPA can safely and effectively complete this removal action without performing a permanent relocation.

1. Policy: *Permanent relocation may be considered in situations where EPA has determined that structures must be destroyed because they physically block or otherwise interfere with a cleanup and methods for lifting of moving structures safely, or conducting cleanup around the structures, are* ***not implementable*** *from an engineering perspective.*

The yard features and structures that must be moved to complete this removal action can be safely moved and they will not interfere with the cleanup. Based on existing data, EPA does

not plan to excavate under houses. The removal of soils is implementable from an engineering perspective.

2. Policy: *Permanent relocation may be considered in situations where EPA has determined that structures cannot be decontaminated to levels that are protective of human health for their intended use, thus the decontamination alternative may not be implementable.*

Decontamination of major structures (e.g. buildings) is not required for the contemplated removal action. Most minor structures (e.g fences, retaining walls) that are above ground can be moved and reused. Minor structures below ground (e.g. footings, root balls) can be removed and disposed, and then replaced with in-kind materials and features. Hence, the contamination can be removed effectively from the properties.

3. Policy: *Permanent relocation may be considered when EPA determines that potential treatment or other response actions would require the imposition of unreasonable use restrictions to maintain protectiveness (e.g. such as children playing in their yards, would have to be prohibited or severely limited)*

It is anticipated that, through the removal action requested in this Action Memorandum, EPA will be able to restore the properties within the Kenwood storm water drainage pathway to full residential use. Because the contamination will have been removed as a result of this removal action, no use restrictions will be necessary to maintain protectiveness and typical activities will be not be curtailed.

4. Policy: *Permanent relocation may be considered when an alternative under evaluation includes a temporary relocation expected to last longer than one year.*

It is anticipated that EPA will be able to complete this action without the need for any temporary relocations. However, should temporary relocation be requested or determined necessary, its duration for a resident of a given property would not exceed the length of the removal work at that property. About 2-3 weeks is expected to be required to excavate and install backfill, and another 3-4 weeks may be required to restore each property. Temporary relocations exceeding a year will not be necessary.

The primary reasons for using removal authority in this case are (1) to acquire the ability to act more quickly to address the contamination in this residential area, and (2) because the nature of this contamination problem is well-suited to removal authority. There are no practicable options for reducing the potential for exposure to the contaminated soil itself other than to remove it. In-situ and ex-situ on-site cleanup options are not practicable in this residential yard situation. Therefore, the action required does not lend itself to the development of technically varied alternatives which are then studied at length in a feasibility study. Rather, a classic removal of the contaminated medium is indicated.

9. Excavation and Backfill

Soil excavation shall be performed to meet the aforementioned cleanup standards. Soil excavation shall be performed in accordance with EPA's Response Action Work Plan. Prior to excavation, each home shall be adequately protected to ensure that it is not damaged and that dust does not enter it. House foundations shall be protected. Dust suppression shall be utilized at all times during excavation and while excavations are open, and dust monitoring shall be performed during excavation activity. Where necessary, erosion control and run-on/run-off control shall be provided during excavation activity. Temporary yard coverings and fencing shall be provided where necessary to prevent wind erosion and ensure safety of residents, bystanders, and workers, until the new sod is applied.

Where possible, utility lines (water, gas, sewer, sprinkler systems) that are not affected by the excavation shall be left in place. For utilities that are within the area of excavation or will be affected by it, EPA will either 1) remove the utility line and re-install it, or 2) excavate around the existing line. EPA may excavate and backfill in stages in order to accommodate utility relocations.

Where necessary to provide a resident access to their property while the yard is undergoing excavation, particularly during after-hours, temporary bridges or other pathways will be erected.

Where excavation must occur next to a house, retaining wall, or near the property line; terracing, shoring, or other engineering techniques shall be used to ensure that the foundation and/or existing structures adjoining the property is/are not compromised. Should the excavation be extended to within three feet of a building or property line, the top soil to about six inches in depth will be removed in this area. However, if terracing is necessary to protect the foundation and/or existing structures adjoining the property, some soil within three feet of the building or property line may be left in place.

Excavated material shall be placed in trucks and securely covered prior to transport. Sufficient separation between the trucks and residents, bystanders, and vehicles will be maintained to ensure safety.

Backfill will be compacted in lifts to residential standards so as to be appropriate for residential activities. Topsoil will be provided for grass and plants in the root zone.

10. Restoration

After the excavation and backfill, yards will be restored to a condition equivalent to that existing before the removal action. Features or items in each yard which are or must be permanently removed, become damaged or destroyed, and/or are discarded as a result of the removal activity shall be removed and reinstalled if practicable or replaced in-kind if reinstallation is not possible. A plan shall be developed with each homeowner identifying which features and items in the yard will be restored and how they will be restored. The homeowner will sign this plan indicating that they agree to the work to be done in their yard.

Items to be restored under this Action Memorandum may include, but are not limited to: fencing, decorative walls, retaining walls, driveways, walkways, sod, tress, bushes, shrubs, plants, sprinkler systems, planter boxes, etc. Restorations shall be performed in accordance with current local building codes and requirements in effect at the time of the removal action.

11. Temporary Relocation

This Action Memorandum provides for temporary relocation benefits to persons living within the Kenwood storm water drainage pathway, in accordance with EPA policies. It is anticipated that all Tier 1 and Tier 2 properties can be excavated and backfilled without requiring temporary relocation. However, some residents affected by the action may wish to be temporarily relocated due to vibrations, noise or other disruptions and some residents may have special needs or situations (such as sleeping during the daytime, dust allergies, etc.) which will necessitate temporary relocation.

For families receiving temporary relocation, housing shall be provided. The Government shall rent space for the residents, provided they have signed and honor their relocation agreements. Temporary relocation for pets, if required, may be provided under this Action Memorandum. Temporary relocation may be provided for families living immediately adjacent to a property receiving active removal work, if appropriate. During temporary relocation, security services will be provided for the property of affected persons. A security guard will be posted outside the home during all evening, night, and morning hours and any other times that cleanup work is not ongoing at the property.

No permanent relocation shall be provided under this Action Memorandum.

12. Waste Soil Temporary Stockpile

Assuming that EPA reaches a requisite property access agreement with Montrose Chemical Corporation and Atkemix Thirty-Seven (the current owner of the property), waste soils excavated during this removal action will be transported by covered truck approximately 2-4 blocks to the former Montrose Chemical plant property at 20201 S. Normandie Avenue. The plant property is presently covered with asphalt, underlain by soils contaminated with up to tens of thousands of ppm total DDT. EPA is currently evaluating cleanup alternatives for the soils at the former Montrose plant site by way of a Feasibility Study. Soils from this removal action will be temporarily stockpiled until such time as a response action is selected for the plant property soils. The response action selection document for those soils, presumably a record of decision (ROD) will consider the ultimate treatment/disposal of the removal soils along with the plant soils. Presumably, the same response action will apply to both. For example, if a cap is applied to the plant property, then the removal soils can be spread out and the cap placed on top. If on-site treatment is applied, the same treatment can be applied to the removal soils.

The stockpiled soil shall be placed in one or more lined and bermed cells. While cells are being filled, there shall be dust and erosion control At each cell, a liner shall be placed on the asphalt and over the sides of the berm. An inner liner shall be wrapped around the soil material, folded over the top, and sealed. A final liner shall cover the top of the cell and be ballasted down outside the bermed area. The cells will be designed to last, with proper maintenance, for at least 5 years from the time they are sealed. A system shall be in place to be able to detect/inspect for liquids inside the liner. This stockpile shall meet the Applicable or Relevant and Appropriate Requirements (ARARs) identified in the ARARs section of this Action Memorandum, below. The stockpile shall be properly maintained during its life in accordance with maintenance and design specifications. This shall include regular periodic inspections for tears in the liners.

13. Waste Soil Contingency

In the event that the requisite agreements with Montrose Chemical Corporation to allow for the temporary stockpile on the former Montrose plant property cannot be reached in time for the action to proceed, or in the event that regulatory requirements cannot be met, then the following contingency action shall be considered part of this removal action.

Waste soil shall be transported, in accordance with all applicable statutes and regulations, to a hazardous waste incineration facility which is in compliance with the CERCLA Off-Site Policy, 42 U.S.C. Section 9621(d)(3). The soil will be incinerated so as to meet the RCRA HSWA Amendments ("Land Ban") requirements, 40 C.F.R. Part 268, for DDT prior to landfilling the ash.

B. COST ESTIMATE

1. Waste Volume and Mass

The initial volume (before expansion due to confirmation sampling) of waste associated with Tier 1 properties is approximately 5500 cubic yards, or 7150 tons of material. The initial volume of waste associated with Tier 2 properties is approximately 2200 cubic yards, or 2860 tons of material. The total initial volume is approximately 7700 cubic yards, or 10,010 tons of material. A 15% contingency is added to allow for the possibility that confirmation sampling will indicate a need for increased soil volume for expansion due to contingency sampling. The total waste volume estimate, after contingency, is 8855 cubic yards and 11,511 tons of material.

2. Costs

The following is an estimate of costs associated with this removal action:

Plans	$140,000
Surveying and Reconnaissance	$112,000
Direct Costs: Excavation, Backfill, and Restoration for 12 Tier 1 Households	$490,000
Direct Costs: Excavation, Backfill, and Restoration for 11 Tier 2 Households	$295,000
Sampling and Analysis	252,000
Teardown and Demobilization	22,000
Soil Management and Stockpile	$300,000
Site Administration	$263,000
Relocation for 15 households for 3 weeks on average	$110,000
Equipment, Lodging, Project Support, Site Visits, etc.	300,000
Contractor Fringe, G+A, Overhead, Fee	$470,000
U.S. Army Corps of Engineers Costs	$293,000
TOTAL IF WASTE IS STOCKPILED	**$3,047,000**
If waste is transported for incineration...	
Soil Stockpile	<$300,000>
Incineration and Transport Costs	$7,367,000
TOTAL IF WASTE IS SENT FOR INCINERATION	**$10,114,000**

C. WAIVER OF STATUTORY EXPENDITURE AND TIME LIMITS

As summarized above, the expected costs of this removal action exceed the $2 million dollar limitation for such actions contained in section 104(c)(1) of CERCLA, 42 U.S.C. Section 9604(c)(1). However, the removal action as set out in this action memorandum is consistent with selected remedial actions at the Montrose site and is non inconsistent with remedial actions that may be selected in the future. Consequently, the consistency exemption to the $2 million dollar limit on removal action, as established by and contained in section 104(c)(1) of CERCLA, applies in this case and allows the selection of removal actions that are expected to cost in excess of $2 million. 42 U.S.C. Section 9604(c)(1)(c). The excavation of contaminated soil and storage of that soil at the montrose plant property will not interfere with the implementation of the remedial actions selected by EPA to address groundwater contamination. The locations at the Montrose plant property where the soil will be stored will be selected to avoid interference with existing monitoring wells and potential locations of the above-ground groundwater treatment plant. Additionally, the excavation of contaminated soil and storage at the Montrose plant property will not in any way limit or interfere will the implementation of remedial actions that may be selected in the future by EPA with respect to other operable units of the Montrose site. This removal action provides for the storage of the excavated soils at the Montrose plant property until a remedy is selected for the contaminated soils at the Montrose plant property. Such storage and subsequent remedial management of such soils is consistent with all of the remedial alternatives currently being considered by EPA: no action, a RCRA equivalent cap, on-property treatment and off-property treatment of contaminated soils. The removal actions set out in this action memorandum are necessary to address current unacceptable risks to human health resulting from the presence of elevated levels of DDT in currently occupied residential properties.

D. APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

The following legal requirements are determined by this Action Memorandum to be applicable or relevant requirements (ARARs) for the selected removal actions described herein. See 42 U.S.C Section 9621(d)(2) and 40 C.F.R. Section 300.415(j)(attainment of ARARs in removal actions). Only substantive portions of the requirements in the cited provisions below are designated as ARARs for this action. EPA has conferred with the California Department of Toxic Substances Control regarding the identification of ARARs for this action and DTSC has concurred with EPA's decision to identify the ARARs listed below.

By this Action Memorandum for purposes of identifying ARARs, EPA is making the determination that the excavated soil must be managed as state and federal hazardous waste. This determination is based on site specific information contained in the Administrative Record, especially information regarding the sources and concentrations of hazardous substances released at and from the Montrose Plant Property and found along the storm water pathway that is contained in the Montrose Site Remedial Investigation and Remedial Investigation Addendum.

Excavated soil containing 1 ppm of DDT or more qualifies as a hazardous waste under California law. 22 CCR Section 66261.24. In addition, excavated soil from the storm water pathway containing DDT or isomers of BHC qualifies as a federal RCRA listed hazardous waste (RCRA Hazardous Waste Numbers U61 and U129 respectively).

1. Applicable or Relevant and Appropriate Requirements

a. South Coast Air Quality Management District Requirements Applicable to the Excavation and Handling of Contaminated Soil

SCAQMD Rule 401 - visible emissions
SCAQMD Rule 402 - nuisance dust
SCAQMD Rule 403 - fugitive dust

b. Hazardous Waste Management - Pre-Transport Requirements ("CCR" - California Code of Regulations)

22 CCR Part 261 - identification of hazardous waste
22 CCR 66262.11 - hazardous waste determination by generator

c. Hazardous Waste Management - Transportation Requirements

22 CCR 66262.30 HW transporter - packaging
22 CCR 66262.31 hW transporter - labeling
22 CCR 66262.32 hW transporter - marking
22 CCR 66262.33 hW transporter - placarding
22 CCR 66263.16 hW transporter - container requirements
22 CCR 66263.23 (a)(c)(d) hW transporter - operation requirements
22 CCR 66263.30 hW transporter - requirements re: release during transportation
22 CCR 66263.31 hW transporter - requirements re: release during transportation

d. Hazardous Waste Management - Requirements for Storage of Contaminated Soil at the Montrose Plant Property

22 CCR 66264.250 (c) waste pile applicability and operational standards (substantive standards only).
22 CCR 66264.251 (a)(e)(i)(l) - waste pile design and operating requirements
22 CCR 66264.254 waste pile inspection requirements

22 CCR 66264.256 waste piles - prohibition against storage of incompatible wastes. *This section and section 257 below pertain to situations that are not expected to occur during the implementation of this removal action, however, they are named as applicable requirements to ensure that such situations do not occur.*

22 CCR 66264.257 waste piles - prohibition against storage of reactive wastes

e. Hazardous Waste Storage Facility Requirements Triggered by Storage of Contaminated Soil at the Montrose Plant Property

22 CCR 66264.14 Security Requirements

22 CCR 66264.15 (a), (b)(1-4), (c), and (d) General Inspection Requirements

22 CCR 66264.19 (a-c) Construction QA, (d) substantive requirements only, with EPA providing the approval that the CQA plan was successfully implemented and the design requirements were met.

22 CCR 66264.25(a) Design Standards - storms

22 CCR 66264.31 Preparedness and Prevention

22 CCR 66264.37 Arrangements with Local Authorities - *note that this requirement applies both to the filling of the soil storage cells as well as the ongoing maintenance of the cells.*

22 CCR 66264.51 Contingency Plans

22 CCR 66264.52 Content of Contingency Plan

22 CCR 66264.53(2) Copies of Contingency Plan

22 CCR 66264.54 Amendment of Contingency Plan

22 CCR 66264.55 Emergency Coordinator

22 CCR 66264.56 Emergency Procedures

2. Other Legal Requirements of Independent Applicability

The removal actions selected in this Action Memorandum may trigger additional legal requirements. These requirements are not identified as ARARs because such requirements do not meet the definitional prerequisites for ARARS as set out in CERCLA section 121, 42 U.S.C. 9621(d)(2), or because such requirements are triggered by offsite activities. However, the requirements set out below may apply to portions of the selected removal action as a result of the independent application of legal authorities other than Section 121(d)(2) of CERCLA.

a. CERCLA Section 121(d)(3), 42 U.S.C. Section 9621(d)(3) and 40 C.F.R. Section 440 requirements regarding offsite disposal of material contaminated with hazardous substances.

b. Provisions of Title 22 of the California Code of Regulations and parallel provisions of federal RCRA regulations related to offsite shipments of hazardous waste, including but not limited to treatment and disposal requirements and limitations.[6] See generally, 40 C.F.R. Part 268.

c. Provisions of the California Porter Cologne Act prohibiting and regulating the release of pollutants into waters of the State.

d. Federal and State Occupational Health and Safety Requirements.

e. CERCLA Section 103, 42 U.S.C. Section 9603, notification requirements and comparable provisions of California law.

E. SUMMARY

This removal action will address elevated levels of total DDT and significant long-term (chronic lifetime) potential health risks associated with total DDT in residential yards along the Kenwood storm water drainage pathway. Wastes from the former Montrose DDT manufacturing plant mixed with rain water formerly ran down a ditch in this pathway which was later replaced with a buried drain. Soils at residential homes within the Kenwood storm water drainage pathway will be excavated and replaced with clean soil material, which will be appropriately compacted. Features in the yards will be restored with an "in-kind" replacement. Residents affected by the action requesting and requiring relocation during the action will be provided temporary relocation benefits.

Soils will be removed to a level of 10 ppm total DDT, which is close to the range of background concentrations of DDT in this area. At the conclusion of the removal action, residual risks from soils in the Kenwood storm water drainage pathway will be near the low end of EPA's risk range; properties receiving the cleanup will be usable for residential purposes without

[6] Movement of contaminated soil from Kenwood Avenue to the Montrose Plant Property does not trigger these requirements as such movement within an area of contamination (i.e. the storm water pathway beginning at and including the Plant Property to and including the contamination along the west side of Kenwood Avenue) does not constitute "placement" under federal or state hazardous waste law requiring treatment of the soil at this time. See US EPA, OSWER, Compliance with Other Laws Manual: Interim Final, Vol I at 2-15 to2-18 (EPA 540 G-89 006) (August 1988). Subsequent remedial management of such soils at the Montrose Plant Property may be accomplished through the designation of a RCRA corrective action management unit but it is not necessary to make such a determination at this time.

restriction, and the unacceptable residential health risk from DDT in this neighborhood will have been addressed.

VI. Outstanding Policy Issues

No outstanding policy issues have been identified at this time.

VII. Enforcement

See Attachment 2, confidential memorandum from John Lyons, EPA Assistant Regional Counsel.

VIII. Recommendation

As documented in this Action Memorandum, conditions within the Kenwood storm water drainage pathway meet the National Contingency Plan criteria for a removal action (40 C.F.R. Section 300.415(b)(2)), and the CERCLA Section 104(c) consistency exemption from the $2 million limitation. Approval of the proposed removal action is recommended.

The total project cost ceiling is estimated to be $3,047,000 if the waste disposal contingency is not activated, and $10,114,000 if the contingency is activated. The funds for this removal action will be drawn initially from the Montrose Chemical Superfund Site Special Account. If these funds are insufficient, the difference will be drawn from the Superfund Removal budget. It is expected that the removal action can be completed within six months of signing this Action Memorandum.

John Kemmerer for Keith Takata — 6/7/01

Approval Signature — Date

Disapproval Signature — Date

Figures

Figure 1a:
Montrose Plant Site and Historical Storm Water Drainage

Figure 1b:
Former Kenwood Ditch, Former Kenwood Ditch Easement, and Kenwood Drain

Figure 2:
Vicinity Map for Response Action

Figure 3:
Properties Involved in This Removal Action and Transected by The Kenwood Storm Water Drainage Pathway

Attachments

1. Memorandum to Montrose File from Dr, Sophia Serda, Regional Toxicologist

2. Memorandum from John Lyons, Assistant Regional Counsel

FIGURE 1a

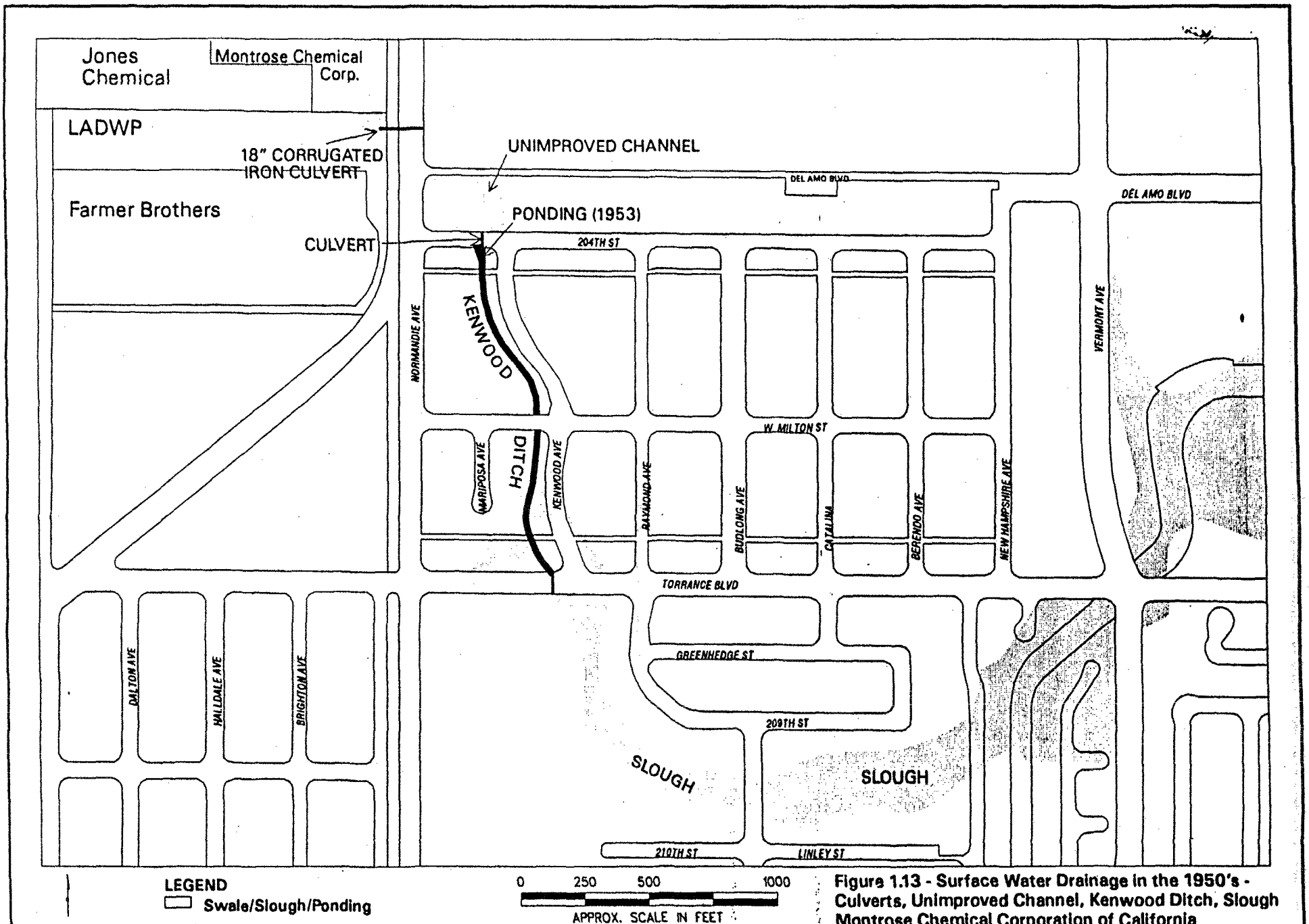

Figure 1.13 - Surface Water Drainage in the 1950's - Culverts, Unimproved Channel, Kenwood Ditch, Slough Montrose Chemical Corporation of California

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FIGURE 1b

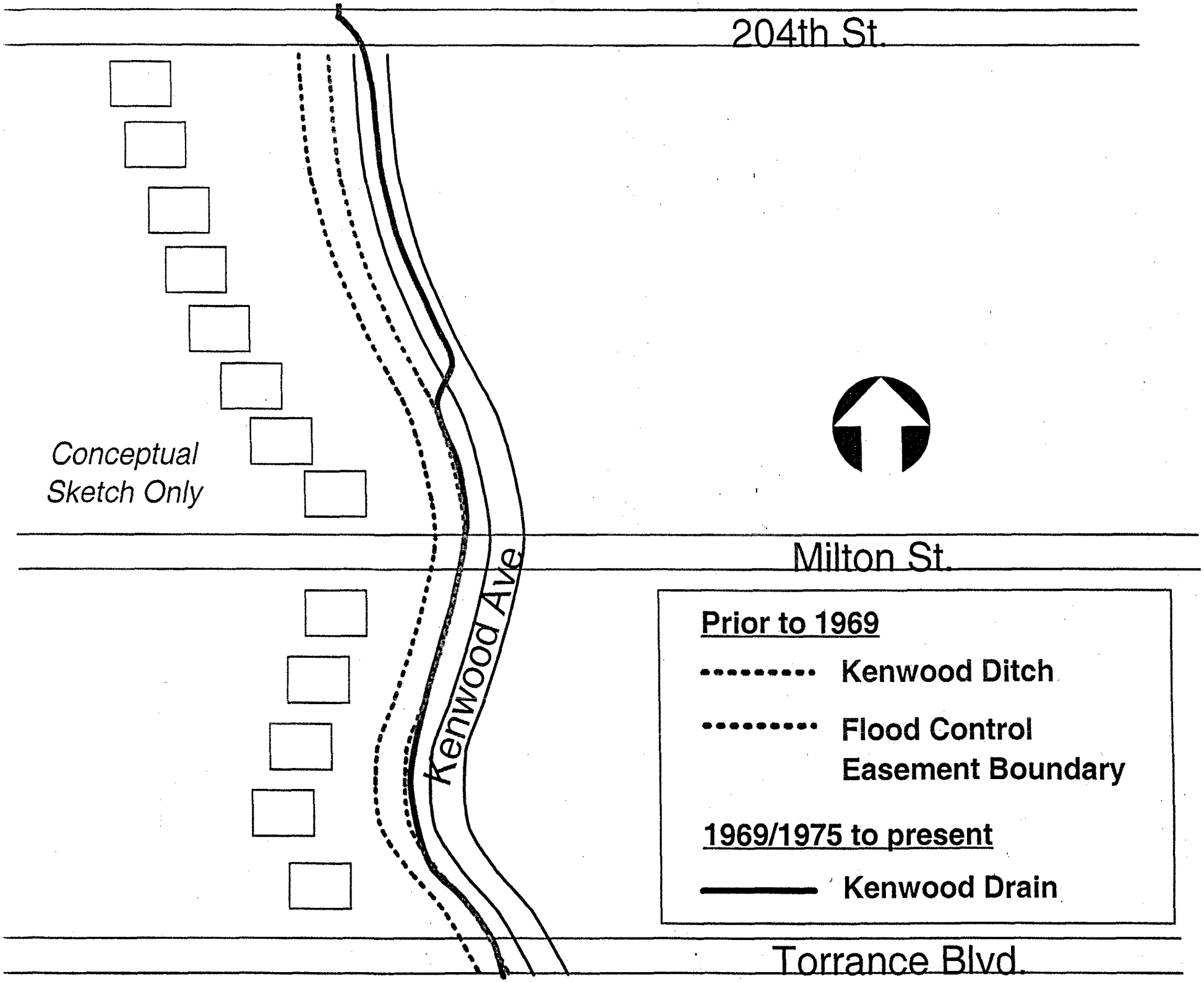
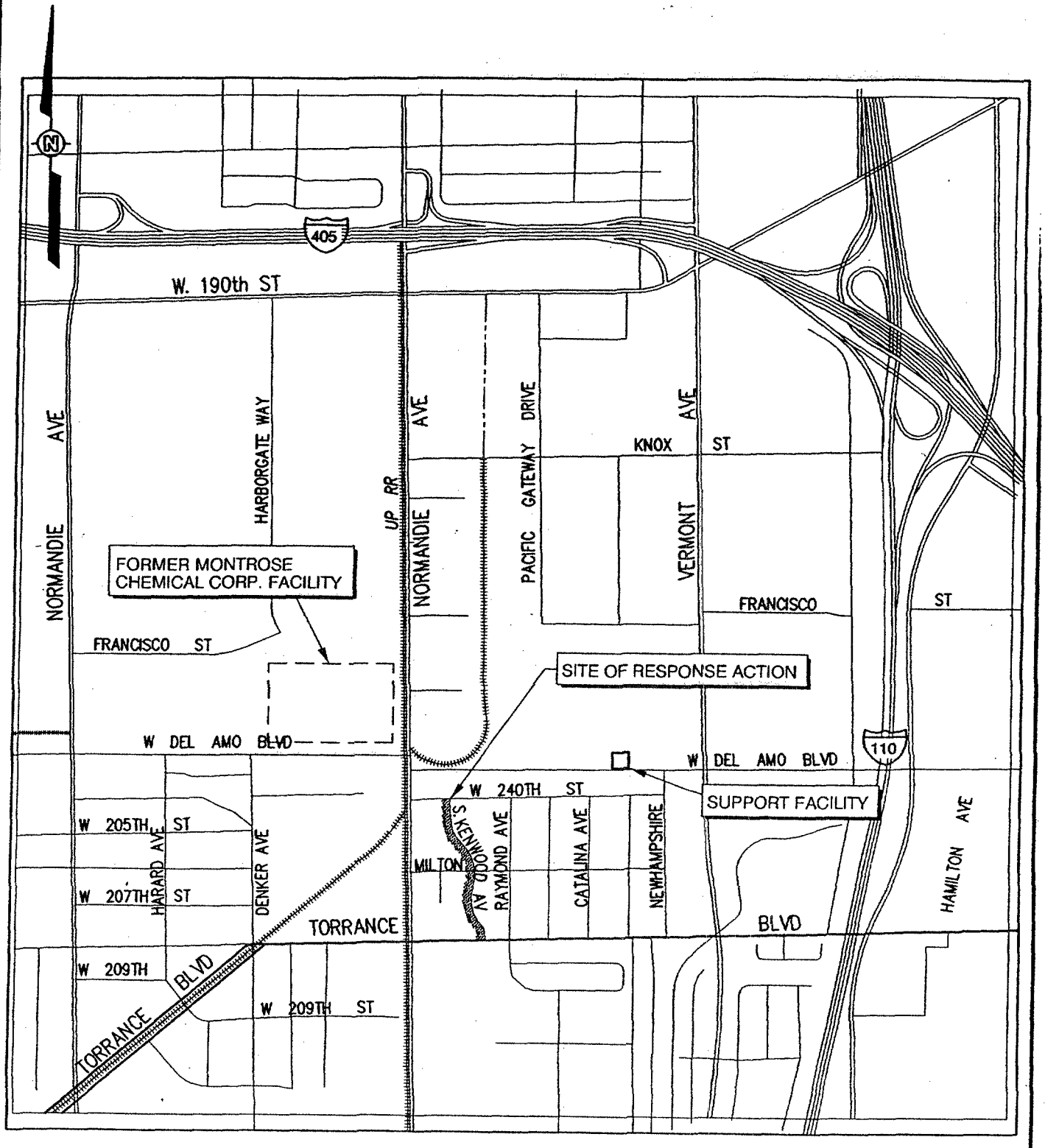

204th St.
Conceptual
Sketch Only
Kenwood Ave
Milton St.
Prior to 1969
Kenwood Ditch
Flood Control
Easement Boundary
1969/1975 to present
Kenwood Drain
Torrance Blvd.

FIGURE 2



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IT CORPORATION

U.S. ARMY CORPS OF ENGINEERS
RAPID RESPONSE

FIGURE 1-1
VICINITY MAP

KENWOOD STORM WATER DRAINAGE PATHWAY
LOS ANGELES, CALIFORNIA

FIGURE 3

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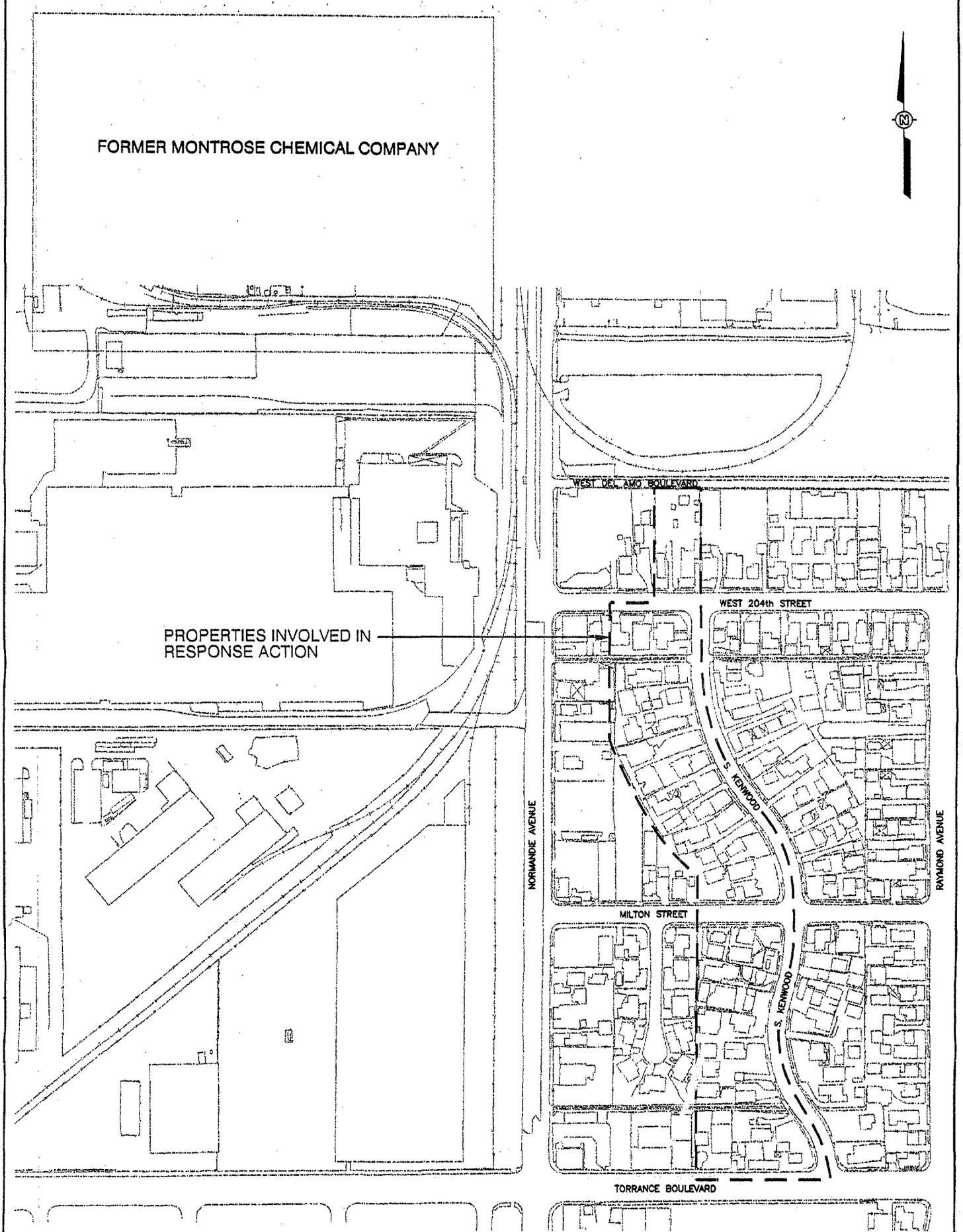

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IT CORPORATION

U.S. ARMY CORPS OF ENGINEERS
RAPID RESPONSE

FIGURE 1-2

SITE OF RESPONSE ACTION

KENWOOD STORM WATER DRAINAGE PATHWAY
LOS ANGELES, CALIFORNIA

Attachment 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 7, 2001

MEMORANDUM

Subj: Kenwood Stormwater Drainage Pathway

To: Jeff Dhont, Project Manager

From: Dr. Sophia Serda, Toxicologist Dr. Sophia Serda

As you know, I am the EPA Region 9 toxicologist for the Kenwood neighborhood, as well as the Montrose Chemical Superfund site. I have previously reviewed and provided comments on the Risk Assessment for soils associated with the Kenwood storm water drainage pathway (Appendix K; *Remedial Investigation Addendum; Residential Soils and Produce Investigation, Montrose Superfund Site*; April 2001). It is my opinion that the Risk Assessment is in compliance with EPA Risk Assessment Guidance for Superfund and meets the requirement for a risk assessment under both CERCLA and the NCP.

The Risk Assessment provides estimates of future potential health risks. The risk estimates indicate that soils on the west side of Kenwood Avenue are sufficiently elevated above background to require an EPA removal cleanup action.

Thank you for giving me the opportunity to provide technical support. If you have further questions, please feel free to contact me at 744-2307.